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Development and validation of gas chromatography-mass spectrometric method for the determination of epoxidized soybean oil in foods stored in glass jars with metal lids (Article)

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Abstract

A method has been developed for the determination of epoxidized soybean oil (ESBO) in oily foods stored in glass jars with metal lids using gas chromatography-mass spectrometry (GC-MS). ESBO and its internal standard (cis,cis-11,12;14,15-diepoxyeicosanoate) were isolated from the matrix by transesterification process. The developed method showed good linear dynamic range between 0.7-20 µg mL⁻¹ with coefficients of determination (R²) > 0.9968 and acceptable limit of detection and limit of quantitation of 7 and 23 mg kg⁻¹, respectively, based on linearity calculations. Analyte recoveries were 90.84±27.24% for low concentration, 78.05±11.59% for medium concentration and 99.23±10.20% for high concentration. This first fully validated GC-MS method was successfully applied for the determination of ESBO in foods stored in glass jar with metal lid. Among the 31 food samples studied, 6 samples were found to exceed the specific migration limit of 60 mg kg⁻¹ (based on EU Directive 2002/72/EC). The developed method is thus potentially useful for routine analysis for the determination of ESBO.

Author keywords

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Indexed keywords

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